Indigenous Natural and Cultural Resource Management and Health

Burgess, C.P.; Johnston, F.H.

Introduction

The health of humans and the environment are connected. This socio-ecological model of health, articulated by the World Health Organisation in 1986, [1] has grown in significance with an increasing awareness of the impacts of climate change. This model has profound significance for Indigenous Australians living on their own Country in remote areas of northern Australia. [2] The practices involved in Natural and Cultural Resource Management (NCRM) or ‘Caring for Country’ are asserted to have a positive impact on the health of the landscapes and the populations that inhabit them. [3] Non-Indigenous Australians have generally failed to appreciate the depth and dynamism of this continued association with land and sea. [4]

The human health module of the Healthy Country: Healthy People project had the principal objective of comparing the health of participants in NCRM with non-participants in a cross-sectional study. This required firstly, the development of a measurement scale regarding NCRM participation and secondly, examination of the associations between NCRM participation and a range health outcomes responsible for premature illness and death. Preliminary findings are outlined in this briefing document.

Key Findings

Indigenous NCRM is regarded to be an important determinant of landscape and human health;

Indigenous NCRM comprises several interrelated activities and participation in NCRM can be measured satisfactorily in the research setting;

Higher levels of participation in Indigenous NCRM are associated with significantly better health outcomes;

Testing the causal link between NCRM and health requires further research following populations over time.

Key Policy Implication

In addition to delivering ecological benefits and economic development, investment in Indigenous NCRM has the potential to promote significant health gains in remote Indigenous communities if a causal link is established.

1 NHMRC PhD Scholar, Menzies School of Health Research, Institute of Advanced Studies, Charles Darwin University (CDU)
2 NHMRC PhD Scholar, Menzies School of Health Research. Adjunct research fellow, School for Environmental Research, CDU and Menzies Research Institute, Hobart.
**What was already known about Indigenous NCRM and health?**

Indigenous NCRM is regarded to be an important determinant of landscape and human health

Sustained administrative pressures to centralise populations and services has led to the depopulation of homelands and the creation of remote area townships. This has impacted significantly on the health of both landscapes and people, who now suffer from a burden of illness associated with inactivity, malnutrition, social dysfunction, [5] and pervasive disadvantages. [6] Indigenous populations living on homelands have been observed to have better health outcomes [7-9] as have individuals with diabetes temporarily reinvigorating NCRM practices. [10] Homelands are a setting where NCRM remains a significant part of daily activities. [11, 12] There have previously been no formal evaluations of NCRM and health, despite the rapid growth of contemporary NCRM programs across remote areas of the NT over the last decade.[13] Formal ranger programs, similar to Aboriginal Health Workers in the health sector, form a vital connection between customary NCRM practices and the delivery of essential environmental services in a culturally secure manner. These programs are belatedly attracting industry investment. [14]

Indigenous NCRM comprises several interrelated activities

Anthropologists have clearly and repeatedly articulated the close connection between Indigenous peoples and their ancestral lands and seas. [15, 16] This relationship includes ‘Caring for Country’ or exercising cultural obligations that are felt to lead to ecological improvements for landscapes and the physical health and social wellbeing of the populations living there. [3, 4, 15, 17] (See table 1)

<table>
<thead>
<tr>
<th><strong>Table 1 Responsibilities to country</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Burning (cleansing for ceremony and for hunting)</td>
</tr>
<tr>
<td>Let the country know we are there---using resources, hunting and fishing</td>
</tr>
<tr>
<td>Protecting the integrity of the country through respect</td>
</tr>
<tr>
<td>Protecting and enhancing species diversity</td>
</tr>
<tr>
<td>Protecting sacred areas</td>
</tr>
<tr>
<td>Providing a new generation and teaching them on country</td>
</tr>
<tr>
<td>Learning and performing ceremonies</td>
</tr>
</tbody>
</table>


Customary obligations to country overlap with the aspirations and activities of formal ranger programs.
What has this study contributed to our understanding of NCRM and health?

Indigenous participation in NCRM can be measured satisfactorily in this research setting

Following the work of Rose, [15] (see table 1 above) a measurement scale of Indigenous NCRM was developed, refined and piloted. A higher level of NCRM participation generated a higher score. The measurement scale performed satisfactorily using psychometric methods to test its validity. This scale was then used to investigate associations between NCRM participation and health outcomes. Although NCRM participants came from both the township and homelands, homelands were the setting where NCRM was much more common. We adjusted our analyses to account for place of residence.

Higher levels of participation in Indigenous NCRM are associated with significantly better health outcomes.

Indigenous health initiatives must be associated with improved outcomes in areas responsible for the greatest burden of disease and death. Cardiovascular disease and diabetes account for 40% of excess Indigenous mortality and more than 21,800 potentially preventable hospital admissions each year.[5] The preliminary results from this study indicate that higher levels of NCRM participation are associated with better outcomes across a broad array of risk factors linked to diabetes and cardiovascular risk. Participants in NCRM self-report a more nutritious diet and greater levels of physical activity. Smoking prevalence exceeds 70% in this population regardless of NCRM participation. Three related preliminary findings are presented graphically below.

Figure 1 The association between NCRM and Body Mass Index (BMI)

Body mass index (BMI) is a measure of appropriate body weight for a person’s height. An elevated BMI (≥ 25) is associated with greater risk for cardiovascular disease and the development of diabetes. [18]
NIDDM is associated with increased cardiovascular risk, kidney failure, blindness, ulcers and limb amputations. It is the greatest single cause of preventable Indigenous hospital admissions. [5]

Figure 3: The association between NCRM and 10 year risk of Coronary Heart Disease (CHD)

CHD risk (an estimated risk of a heart attack occurring) was calculated using the Framingham equations based on traditional risk factors of blood pressure, diabetes, smoking and cholesterol.[19]
What are the limitations of this study?

Establishing the causal link between NCRM and health requires further research following populations over time.

This is an exploratory study. These preliminary findings, while supportive of Indigenous assertions of health gains linked to NCRM, need to be viewed within the study limitations. More robust studies are required to support these findings. A cross-sectional study cannot determine if NCRM prevents chronic diseases or if chronic diseases preclude NCRM participation. Two points may favour the former. First, many chronic diseases have a long asymptomatic course prior to clinical presentation. Second, chronic diseases such as diabetes may improve markedly upon reinvigoration of NCRM activities. [10] Ultimately this issue can only be resolved by following large groups of people over time to unravel the causal direction of NCRM participation and health outcomes.

Our measurement of NCRM may not be transferable to other communities who may define NCRM differently. This study used community derived definitions of NCRM so it is not a health evaluation of formal ranger programs, even though the role of ranger programs appears to overlap with community derived definitions and practices of NCRM as described previously.

What are the policy relevant findings from this study?

Possible Implications of these preliminary findings

- NCRM is associated with significant health outcomes irrespective of primary place of residence. Homelands however, are a setting that is very strongly associated with NCRM;
- The expansion of Indigenous NCRM activities in remote Indigenous communities would most likely deliver improved environments, [20] economic development [14] and also appears to have the potential to promote Indigenous health;
- The health outcomes associated with NCRM may help prevent or delay significant causes of premature disease and death, delivering significant economic savings in health care expenditure;
- This is a positive study in Indigenous health that responds to Indigenous requests to investigate ‘what works’ with a focus on cultural and social drivers of improved health outcomes [21] and supports the need for further research in this area;
- Further studies with more robust methods are required to replicate or refute these findings and to clarify the causal direction of the association.

Acknowledgements

We thank Professor Ross Bailie and Mr Joseph McDonnell from the Menzies School of Health Research for their comments on an earlier draft and assistance with statistical analysis. This research was funded by LWA, NHMRC grants #333421 & #320860 and Pfizer CVL. Dr Burgess was supported by PhD scholarships. Initially from the Centre for Remote Health, and subsequently NHMRC public health scholarship #333416.

Corresponding author: Dr C. Paul Burgess
Menzies School of Health Research
PO Box 41096, Casuarina, NT
Ph: 08 8922 8196   Fx: 08 8927 5187
Paul.Burgess@Menzies.edu.au

Menzies School of Health Research, Darwin, NT.
References